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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,536	10/24/2003	Gustav J. Braun	86658RLO	9880

7590 12/28/2006
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EXAMINER

WANG, CLAIRE X

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/692,536	BRAUN ET AL.	
	Examiner	Art Unit	
	Claire Wang	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/17/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claims 12 and 13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 12 and 13 define a "computer program product" embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the

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medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). That is, the scope of the presently claimed "computer program product" can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on "computer-readable medium" or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure. For the purpose of applying prior art said claims are considered to read "A computer readable medium of claim 1." And "A computer readable medium of claim 5".

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edge (US 2002/0171855 A1) in view of Enomoto (US 2003/0031375 A1), further in view of Fredlund et al. (US 2002/0063900 A1).

As to claim 1, Edge teaches a method of processing a digital image having pixels to improve the sharpness of a print generated from the digital image comprising:
determining a magnification value representing the magnification of a pixel of the digital

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image on the print based on a number of input digital image pixels and an output number of digital image pixels (Determine magnification factor; Fig. 3, step 32); producing a degree of sharpening in response to the magnification value (Paragraph [0007] lines 1-3 teaches that the degree of sharpening is controlled based on the magnification factor); using sharpener on the digital image to adjust the sharpness of the digital image to produce a sharpened digital image ([0007] explains how sharpness is adjusted by magnification factors). However, Edge does not teach that the sharpening technique is performed using a filter. Enomoto teaches an image sharpness adjusting technique using low-pass filter (Fig. 5 Item 98). Thus Enomoto's low-pass filter reads on the claimed sharpening filter. Therefore, it would have been obvious at the time of the invention to combine the Edge's adjustable sharpening of a magnified image with the sharpening low-pass filter of Enomoto in order to sharpen the image and to suppress graininess (Enomoto [0187] line 2; [0199] line 6).

Neither Edge nor Enomoto teach resizing according to the magnification value the sharpened digital image to produce a resized sharpened digital image, which includes the output number of digital image pixels. Also, producing the print based on the resized sharpened digital image. Fredlund teaches it is possible to resize the image either before or after the image is sharpened ([0038]). Fredlund also teaches the size rendered for the image for printing is according the resized image (Fig. 6). Thus, Fredlund's image resize and sharpening system reads on the claimed image system. Therefore, it would have been obvious at the time of the invention to combine the magnification system of Edge and Nomura with the resizing steps of Fredlund in order

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to save processing time if significant enlargement is requested (Fredlund [0038, lines 4-7]).

As to claim 2, Edge teaches providing a continuous function and sampling the continuous function in accordance with the magnification value to produce coefficients of the filter ([0008] teaches the degree of sharpening and magnification factor can be correlated by mathematical function).

As to claim 3, Edge and Enomoto teach a default filter and adjusting the coefficients of such filter in accordance with the magnification value (Edge [0008] teaches When the magnification factor for an image changes, the corresponding sharpening value can be calculated or retrieved and applied to the sharpening algorithm, e.g., as a coefficient or offset).

As to claim 4, Edge teaches wherein the resizing according to the magnification value includes bilinear or bicubic interpolation (an example of optimal scaling is bicubic interpolation; [0026] lines 11-12).

As to claim 11, Enomoto teaches where the gain value is calculated in response to a noise reduction process ([0195] teaches the used of sharpness gain in the process to suppress graininess).

As to claim 12, it is the computer readable medium of claim 1. See claim 1 for detail analysis.

As to claim 5, it is the same as claim 1. The only difference between the two claims is the mention of using metadata to produce a gain value and using the low-pass

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filter and the gain value to sharpen the image (Enomoto teaches the use of low-pass filter and gain to sharpen an image; Fig. 5).

As to claim 6, Enomoto teaches wherein the metadata includes ISO, focal length, compression factor, or default ([0057] teaches acquiring an information of focal length).

As to claim 7, Enomoto teaches wherein the gain value is computed by making a computation of the metadata ([0199] teaches the gain is acquired using a special lens type, where the specifics of the lens is known).

As to claim 8, Enomoto teaches wherein the lowpass filter and gain values are used in an unsharp masking process ([0216] teaches the using the low-pass filter and gain values in a unsharp masking).

As to claim 9, wherein the gain value is calculated in response to a balance value, a tonescale value, a noise value or combinations thereof ([0195] teaches the used of sharpness gain in the process to suppress graininess or noise).

As to claim 10, where the gain value is calculated in response to a noise reduction process ([0195] teaches the used of sharpness gain in the process to suppress graininess).

As to claim 13, it is the computer readable medium of claim 5. See claim 5 for detail analysis.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Slavin (US 7,050,649 B2) teaches a suppression of ringing artifacts during image resizing.

Aoyama (US 6,124,841) teaches an image size enlarging method.

Sumi (5,087, 972) teaches a method for processing image signals at a point of interest based on image signal curvature.

Loveridge et al. (US 5,374,995) teaches a method for enhancing sharpness of a sequence of images.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Claire Wang whose telephone number is 571-270-1051. The examiner can normally be reached on 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on 571-272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Claire Wang
12/14/2006



JOSEPH MANCUSO
SUPERVISORY PATENT EXAMINER